

Claims

1. Method for controlling an internal combustion engine with an intake duct, at least one cylinder, an exhaust
5 gas duct (40) and inlet and exhaust valve (32, 38), assigned to the cylinder (26), which for calculation of fresh air mass (MAF) flowing into the cylinder up to a first critical value (P1) of the induction manifold pressure (MAP) is proportional to the induction manifold
10 pressure, as of a second critical value (P2) of the induction manifold pressure is proportional to the induction manifold pressure plus an air mass constant (OFF2) and which runs non-linearly in a transitional area between the two critical values for the induction
15 manifold pressure.
2. Method according to Claim 1, characterized in that for the transitional area the in-flowing air mass additionally becomes dependent on the quotient of the induction
20 manifold pressure and exhaust gas back pressure.
3. Method according to Claim 2, characterized in that the value dependent on the quotient is multiplied by a factor dependent on the speed (56) and the valve overlap
25 (66).
4. Method according to one of Claims 1 to 3, characterized in that for the transitional area the in-flowing mass air is determined as a function of valve overlap and
30 engine speed.
5. Method according to one of Claims 1 to 4, characterized in that the proportionality factor between the in-flowing fresh air mass and the induction manifold pres-

sure is dependent on the speed and/or the position of the crankshaft when the inlet valve (ES) is closed.

- 5 6. Method according to one of Claims 1 to 5, characterized in that the air mass constant has a first constant (η_{01}), the value of which depends on the speed (N) and a value for the valve overlap (VO).
- 10 7. Method according to Claim 6, characterized in that the air mass constant has a second constant (η_{02}), the value of which depends on the speed (N) and the position of the crankshaft when the exhaust valves (AS) are closed.
- 15 8. Method according to one of Claims 1 to 7, characterized in that for the fresh air mass (MAF) flowing into the cylinder, a pressure loss dependent on the speed of flow in the induction manifold is additionally taken into account.
- 20 9. Method according to Claim 8, characterized in that the pressure loss dependent on the speed of flow is determined as a function of one or more variables stored in the control devices.